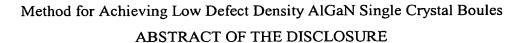
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A method for growing bulk GaN and AlGaN single crystal boules, preferably using a modified HVPE process, is provided. The single crystal boules typically have a volume in excess of 4 cubic centimeters with a minimum dimension of approximately 1 centimeter. If desired, the bulk material can be doped during growth to achieve n-, i-, or p-type conductivity. In order to have growth cycles of sufficient duration, preferably an extended Ga source is used in which a portion of the Ga source is maintained at a relatively high temperature while most of the Ga source is maintained at a temperature close to, and just above, the melting temperature of Ga. To grow large boules of AlGaN, preferably multiple Al sources are used, the Al sources being sequentially activated to avoid Al source depletion and excessive degradation. In order to achieve high growth rates, preferably a dual growth zone reactor is used in which a first, high temperature zone is used for crystal nucleation and a second, low temperature zone is used for rapid crystal growth. Although the process can be used to grow crystals in which the as-grown material and the seed crystal are of different composition, preferably the two crystalline structures have the same composition, thus yielding improved crystal quality.

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Office Action Summary	Application No.	Applicant(s)	//
	Examiner	Group Art Unit	
—The MAILING DATE of this communication appea	rs on the cover she	et beneath the correspondence ad	dress
eriod for Reply	つ		
SHORTENED STATUTORY PERIOD FOR REPLY IS SET T F THIS COMMUNICATION.	O EXPIRE	MONTH(S) FROM THE MAIL	ING DATE
 Extensions of time may be available under the provisions of 37 CFR from the mailing date of this communication. If the period for reply specified above is less than thirty (30) days, a reflection of the period for reply is specified above, such period shall, by default Failure to reply within the set or extended period for reply will, by stat 	eply within the statutory n	ninimum of thirty (30) days will be considered 5 from the mailing date of this communication	d timely. n .
tatus	•		
Responsive to communication(s) filed on 12 10	102		•
This action is FINAL.	•		
Since this application is in condition for allowance except accordance with the practice under Ex parte Quayle, 193	t for formal matters, p 35 C.D. 1 1; 453 O.G.	prosecution as to the merits is close . 213.	ed in
visposition of Claims		is/are pending in the appli	cation.
Claim(s) 26-31 Of the above claim(s)		is/are withdrawn from con	sideration.
		is/are allowed.	
Claim(s) 26 - 3		is/are reiected.	
☐ Claim(s)		is/are objected to.	
☐ Claim(s)			r election
		requirement.	
pplication Papers See the attached Notice of Draftsperson's Patent Drawir	na Poviou PTO-948		
☐ The proposed drawing correction, filed on	•		
☐ The drawing(s) filed on is/are object			
☐ The specification is objected to by the Examiner.			
$\hfill\Box$ The oath or declaration is objected to by the Examiner.			
riority under 35 U.S.C. § 119 (a)-(d)			
 □ Acknowledgment is made of a claim for foreign priority u □ All □ Some* □ None of the CERTIFIED copies of □ received. 			
 □ received in Application No. (Series Code/Serial Numb □ received in this national stage application from the Int 			
*Certified copies not received:		•	
attachment(s)			
		El La face Common PTO 410	
☐ Information Disclosure Statement(s), PTO-1449, Paper N	lo(s)	☐ Interview Summary, PTO-413	
☐ Information Disclosure Statement(s), PTO-1449, Paper N☐ Notice of Reference(s) Cited, PTO-892	lo(s)	□ Notice of Informal Patent Applicati	on, PTO-15

Application/Control Number: 09/778,973

Art Unit: 3617

DETAILED ACTION

1. Claims 26-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

A "buoy wrap" is not understood. The structure or makeup thereof is unclear, and therefore one of ordinary skill in the art could not make and/or use same.

The newly added limitations of "removable from and placeable on" find no support in the specification as originally filed.

- 2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 3. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Severence et al. in view of Murayama et al.

Severence et al. teaches the field of the invention, including a pair of phosphorescent bulbs/caps 22. Severence et al. fails to disclose the claimed material.

Murayama et al. teaches such a material, and further teaches application to buoys.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to form the caps of Severence et al. from a phosphorescent material as that taught by Murayama et al.

Such a combination would have been desirable at the time of the invention was made so as to provide for a buoy which will glow a substantial amount of time in the dark.

4. Applicant's arguments filed 12/10/2002 have been fully considered but they are not persuasive.

Applicant argues that Severence et al. fails to teach a buoy cap mounted upon a buoy.

The examiner does not agree, as "cap" fails to define any specific structure and/or .

arrangement so as to define over the elements 22 of Severance et al.

Re the newly added limitations of removability, Applicant states that the caps of Severence et al. are removable in his/her comments, and the examiner references this statement in support of the rejection made.

Applicant argues that the structure of a buoy wrap is clear from the language "buoy wrap", and therefore such is clear.

Since there is no disclosure as originally filed re a "buoy wrap", its structure is unclear/unknown, and there is no basis for making such a claim in the specification as originally filed.

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5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office

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action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is

reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR

1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

will the statutory period for reply expire later than SIX MONTHS from the date of this final

action.

6. Papers relating to this application may be submitted to Technology Center 3600 by

facsimile transmission. The submission of such papers by facsimile transmission must comply with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Fax Center

number is (703)-872-9326.

7. Any inquiry concerning this communication should be directed to Ed L. Swinehart whose

telephone number is (703)-308-2566.

8. Any inquiry of a general nature or relating to the status of the application should be

directed to the Technology Center 3600 receptionist whose telephone number is (703)-308-1113.

February 26, 2003

Primary Examiner

Art Unit 3617